Communication Analysis of BRCA1 Genetic Counseling

By: Lee Ellington, Debra Roter, William N. Dudley, Bonnie J. Baty, Renn Upchurch, Susan Larson, Jean E. Wylie, Ken R. Smith, and Jeffrey R. Botkin

Ellington L, Roter D, Dudley WN, Baty BJ, Upchurch R, Larson S, Wylie JE, Smith KR, Botkin JR. (2005). Communication Analysis of BRCA1 Genetic Counseling. *J Genet Couns*, *14*(5), 377-86.

Abstract:

In this study, we apply an existing medical communication coding system to BRCA1 genetic counseling sessions, describe the session dynamics, and explore variation in session communication. The sample was comprised of 167 members of an identified BRCA1 kindred whose pretest counseling session was audiotaped and coded using Roter's Interaction Analysis System (RIAS). Three certified genetic counselors followed a research protocol that dictated areas to be covered in the counseling session. We found that it was feasible to code long, protocol driven BRCA1 sessions in a quantitative manner without the use of transcripts and capture the dialogue of all session participants. These findings support the use of RIAS in genetic counseling research. Our results indicate that these BRCA1 sessions were predominantly educational in nature with minimal dialogue devoted to psychosocial issues. We found that participant gender, presence of a client companion, and counselor identity influence session communication.
KEY WORDS: BRCA1; communication; Roter Interaction Analysis System; companion.

Article:

INTRODUCTION

While quantitative coding approaches have gained popularity as a method of analysis to characterize the communication dynamics of medical encounters (Roter, 2000a), only a handful of studies have attempted to apply coding schemes to genetic counseling sessions. In the first of these attempts, Kessler and colleagues (Kessler, 1981; Kessler and Jacopini, 1982) analyzed a single prenatal genetic counseling session, and provided the field with its first insights into what has come to be described as the counseling "black box" (Biesecker and Peters, 2001). The investigators documented the high informational content of the session and relatively little attention to psychosocial issues, as well as a difference in counselor behavior directed towards the session's clients, a husband and wife. Soon after this pioneering study, Wolraich and colleagues (1986) undertook a much more ambitious analysis and applied the Medical Communication Behavior System (MCBS) to 101 genetic counseling. They also used the Roter Interaction Analysis System (RIAS) to code 41 of the same sessions for the purpose of assessing the psychometrics of the MCBS. Both systems appeared to function well and to share substantial conceptual ground. Although, both genetic counselors (n = 9) and physicians (n = 6) participated in the counseling sessions, the authors made "little comment" about the genetic counselors'

"behaviors because they constituted only 8% of the typical interviews and had few correlations" (Wolraich et al., 1986, p. 896).

More recently, investigators have focused on the nature of counselor "directiveness" within genetic counseling practice. For instance, Michie and colleagues (1997) classified and rated verbally directive behaviors in over a 100 genetic counseling sessions in the United Kingdom, conducted by 11 counselors (five with a medical background and six with a nursing background). They found that the degree of directiveness was highly variable between counselors and that counselors used more directive behaviors towards clients they rated as more concerned and towards those from a lower SES background. Taking a different approach, Benkendorf and colleagues (2001) applied qualitative, soicolinguistic methodology to 43 taped and transcribed prenatal genetic counseling sessions. They concluded that counselors are likely to use both direct and indirect speech, the latter often being used when counselors face personal, value laden or potentially embarrassing topics. The authors speculate that counselors' indirect statements, albeit with the purpose of providing nondirective counseling, may lead to client confusion and inhibit rather than facilitate client decision making.

Going beyond nondirectiveness in an effort to capture the full nature of the genetic counseling process, Liede and colleagues (2000) developed and assessed the reliability of the Manchester Observation Code (MOC), a quantitative approach for assessing genetic counseling communication. The authors scored a counselor phrase or series of related phrases (not client) directly from 21 videotaped sessions on the following components: (1) grammatical form, (2) purpose, (3) subject, and (4) cue source. Each of the 21 videotapes were analyzed separately and the authors provided detailed examples of three summarized individual sessions (or a portion of a session) by interpreting the frequencies and proportions of the four MOC components. Their study was designed to develop and evaluate the MOC, and the authors concluded that it is a feasible and reliable tool and encouraged further validation.

A highly detailed quantitative coding system specifically designed for transcribed, audiotaped BRCA1 counseling sessions has been developed by Lobb and colleagues (Butow and Lobb, 2004; Lobb et al., 2004; Lobb et al., 2002). In their system, 10 general categories of genetic counseling behav iors are defined (e.g., genetic testing, understanding, etc.) and within each of the 10 categories, coders indicate the presence or absence of specific content codes which comprise a specific category (Lobb et al., 2002). Using a sample of 158 pretest genetic counseling sessions for Australian women with risk for familial breast and ovarian cancer, Lobb and colleagues (2002) have found genetic provider (four clinical geneticists, one oncologist, and two genetic counselors; counselors often conducted the session with a medical oncologist) variation in communication which is associated with client psychosocial outcomes (Lobb et al., 2004). Furthermore, they found that the breadth of provider communication (e.g., test-related, prevention behaviors, and screening practices) varied according to clients' history of cancer, age, family history, and professional and occupational backgrounds (Lobb et al., 2002; Lobb et al., 2003).

The present study contributes to this small but growing base of research by applying a current version of the RIAS to BRCA1 genetic counseling sessions. The RIAS is the most widely used system of interaction analysis with demonstrated levels of sensitivity and concurrent validity in

over 100 studies of patient-physician communication (Roter and Larson, 2002). With the exception of Wolraich and colleague's (1986) early application of the RIAS to genetic counseling encounters, the system has primarily been used for medical interactions.

As is clear from even a brief review of this literature, strides have been made in understanding the communication of genetic counseling, however, significant questions remain in terms of measurement methodology, practical and clinical utility, and theoretical relevance. The current study attempts a contribution in this regard by exploring three questions. First, it assesses the feasibility of using the RIAS, applied directly to tapes without the use of transcripts, to the very long and complex sessions that comprise protocol driven BRCA1 pretest counseling. Secondly, it assesses the feasibility of coding and characterizing the contribution of all participants typically present during genetic counseling sessions, including the counselor, the client, and the person who may accompany the client to the session. Finally, the study explores the question of session variation by asking how participants (counselor, client, and client companion) may shape the nature of the communication dynamics that characterize a genetic counseling session.

METHODS

Procedure

Study subjects were part of a larger investigation of the psychosocial and behavioral effects of BRCA1 testing described elsewhere (Botkin et al., 1996). In brief, 796 members of a Utah-based kindred (K2082) of Northern European descent, the largest known kindred identified with a BRCA1 mutation (Goldgar et al., 1994), were recruited by letter to the study by informing them of the availability of free genetic counseling and BRCA1 testing as part of a research program. Those who indicated interest in the study were contacted by phone and given study details and written informed consent. Four hundred and eight participants were enrolled in the parent study and interviewed over the telephone. Of these, 296 (59%) elected to participate in a genetic counseling session. Study participants who received genetic counseling were older (44.1 vs. 38.3, $p < .001$), somewhat more likely to have had a first degree female relative with a history of cancer (61.4% vs. 51.2%, $p = .06$) and more likely to have had a personal history of cancer (18.9% vs. 8.9%, $p = .01$) than those who enrolled in the parent study but declined the offer of genetic counseling. However, there were no differences in gender, education, or marital status. Audiotaping of the sessions was not included in the original design of the study, and was thus instituted during the project. One hundred and sixty-seven of one test counseling sessions had tape recordings of sufficient quality to allow analysis. This is the sample that comprise the current study (72 men and 95 women clients). Clients whose sessions comprise the current study did not differ in client characteristics from those whose sessions are not analyzed here.

Three certified female genetic counselors with ten or more years of experience conducted the study counseling sessions. Participants were encouraged to bring a spouse, relative, or friend to the counseling session (referred to as a session companion), and if that person was present during the counseling session, they were also included as a study participant. Assignment of clients to a particular counselor was based on scheduling availability.

Measures

RIAS Coding of the Genetic Counseling Sessions

The session audiotapes were coded at the University of Utah (n = 87) and at Johns Hopkins (n = 80). Four coders were involved, two at each site. All coders had been trained to apply the RIAS directly from audiotapes without transcription using direct entry software. The unit of analysis for RIAS coding is a complete thought expressed as a statement, phrase, or single word. Each complete thought is assigned to a mutually exclusive and exhaustive code.

The RIAS codes provide a comprehensive accounting of every thought expressed during an interactive exchange by each speaker. For purposes of the current study, coding focused on the following categories of communication exchange by the counselor, client, and client-companion: (1) biotechnical and medical information, including family and individual medical history, personal and population risk information regarding breast cancer and the role of the BRCA1 mutation; (2) psychosocial communication, including the discussion of possible psychological/emotional reactions to learning test results and of discussing results with family members; (3) question asking including both closed and open-ended questions of any nature (e.g., medical, psychosocial, and family history); and (4) receptive communication which mainly reflects statements of agreement and understanding. Finally, the ratio of each participants' total talk to all other participants' talk was calculated as indication of the respective participants' degree of verbal contribution, or verbal dominance, in the visit exchange.

The pretest sessions averaged 77.66 min (SD 21.74; range 26.63–134.67). Coding time averaged 2.5 times the length of a session, or approximately 3.5 coding hours per session. Intercoder reliablity was calculated separately between coders at each site based on a set of 10 tapes. Pearson correlation coefficients for each communication category by speaker (genetic counselor and client) averaged ≥ ≥.90. In addition, reliability was checked on 12 tapes across sites. Pearson correlation coefficients between coders at the two sites averaged ≥ ≥.87 for counselor and client categories.

The individual RIAS codes can be considered building blocks or basic communication elements that can be represented as individual category frequencies or as a proportion of all the interactions of a speaker throughout the session. For instance, counselor questions may be represented as a raw frequency (mean frequency of questions = 84) or as a proportion of all counselor statements for example, 6.6% (as later presented in Table II). We discuss both frequencies and proportions because they each offer a somewhat different perspective of a genetic counseling session.

The four categories of communication exchange, described above, comprise most of the session communication; however, not all statements are discussed in the present manuscript. The other codes not included in the composite scores were of low frequency, for example, social chit-chat, counselor statements of reassurance, transitions (e.g., "uh ... uh, well") and inaudible comments. While the "other" codes account for 16% (M = 204.58) counselor statements, 19% (M = 91.81) of client statements, and 22% (M = 28.77) of companion statements they comprise a heterogeneous grouping of variables. Therefore, the present findings associated with the composite categories of communication must be interpreted with caution given that not all session statements are examined.

Predictors of Variation in Session Communication

Three primary sources of communication variation were investigated, client variation, counselor variation, and the presence (or not) of a client companion during the session. Client variation was investigated through an analysis of identity variables, including age, gender, education level, marital status, personal history of cancer, and family history of cancer (i.e., dichotomous variable indicating if client's mother, sister, aunt, or grandmother had been diagnosed with breast or ovarian cancer). Counselor variation was investigated through an analysis of differences in the communication characteristics of the sessions conducted by each of the three counselors who participated in the study. And, finally, the variation attributable to the presence (or not) of a client companion, during the counseling session was investigated.

All analyses were conducted using SPSS version 12.0 (SPSS, 2003). Descriptive statistics were used to examine the communication within the genetic counseling sessions along five dimensions: medical information, psychosocial talk, question asking, receptive talk, and verbal dominance. Differences between the communication of sessions with and without a companion present were examined with t- tests. Given that only three counselors participated in the study, we chose to examine the effect of genetic counselor on communication using one-way Analysis of Variance (ANOVA) in which the counselor was considered as the independent variable. The impact of the client identity characteristics and the presence of a companion during the session was assessed using the Analysis of Covariance (ANCOVA) model in which these characteristics served as covariates.

RESULTS

As can be seen in Table I, most of the sample was married (83.8%), a little over half were female (56.9%), had a mean age of 47.6 years, and a mean education level of 14 years. Most participants had no personal history of cancer (83.2%) and 61.1% had a first-degree female relative who had been diagnosed with breast cancer. Twenty-six percent (26%) were found to be BRCA1 mutation carriers, 59.9% were noncarriers, and 13.8% elected not to have genetic testing or chose not to learn the results of their test.

Also reflected in Table I, are the characteristics of clients who brought someone with them to their counseling session. Almost two-thirds (63.5%) of participants were accompanied. Female clients (61.7% vs. 38.8%,$p = .04$) and those who were married (88.8% vs. 11.2%, $p = .01$) were far more likely to be accompanied than others during their session. No information from the parent study was collected on the relationship of the companion to the client, however, this analysis would suggest that companion is not synonymous with spouse. It is noteworthy that 25% ($n = 15$) of study participants who chose not to undergo genetic testing for the BRCA1 gene, or who did not return to learn the results of their test, attended their pretest session alone, compared with 7.5% ($n = 8$) of clients with a companion ($\chi 2[1, N = 167] = 9.94, p < .01$).

Carrier status did not significantly differ between clients who were accompanied to their session and those who were not.

Description of the BRCA1 Pretest Genetic Counseling Session

The average number of all coded statements per session was 2014; counselors contributed 1511 statements while clients and companions contributed 494 and 127 statements respectively. Sessions with a client companion ($n = 107$) averaged 7 min longer than sessions without a

companion present (81.03 vs 72.93, respectively; F[161] = − = −2.15, p < .05). As expected, the counselors verbally dominated the sessions, averaging three times as many of the statements as the clients and nearly 12 times as many statements as the companion.

Table I. Participant Characteristics

	Total sample ($N = 167$)		Companion present ($N = 107$)		No companion ($N = 60$)	
	Mean	(*SD*)	Mean	(*SD*)	Mean	(*SD*)
Age	47.6	(15.91)	48.29	(15.99)	46.39	(15.83)
Education	13.81	(1.87)	13.78	(1.81)	13.88	(2.00)
	Frequency	(%)	Frequency	(%)	Frequency	(%)
Gender						
Male	72	(43.1)	41	(38.3)	31	(51.7)
Female	95	(56.9)	66	(61.7)	29	(48.3)
Marital status						
Not married	27	(16.2)	12	(11.2)	15	(25.0)
Married	140	(83.8)	95	(88.8)	45	(75.0)
Personal cancer history						
No history	139	(83.2)	84	(78.5)	55	(91.7)
Cancer history	28	(16.8)	23	(21.5)	5	(8.3)
Family cancer history						
No history	65	(38.9)	35	(32.7)	30	(50.0)
Cancer history	102	(61.1)	72	(67.3)	30	(50.0)
Testing and follow-up status						
Did not return for testing or did not return for test results	23	(13.8)	8	(7.5)	15	(25.0)
Returned for testing and results	144	(86.2)	99	(92.5)	45	(75.0)
Test result: carrier status						
Noncarrier	100	(69.4)	71	(71.7)	29	(64.4)
Carrier	44	(30.6)	28	(28.3)	16	(35.6)

As can be seen in Table II, most of the communication of the counseling sessions was bio-medical and technical in nature with proportionally fewer statements made of a psychosocial nature. For counselors, 3.5 % (M = 45 statements) of their total statements were psychosocial in nature whereas 62% (M = 793 statements) were related to information about cancer and BRCA1 risk. The communication contributed by both the client and companion was similarly dominated by family history and medical information (41 % for both client and companion; M = 190 client and M = 33 companion statements) with only 4% (M = 30 client and M = 6 companion statements) of their dialogue being of a psychosocial nature. Questions comprise a small proportion of all dialogue (counselor 7%, client 4%, and companion 6%); however, given the length of these sessions, the actual number of questions asked is quite high. Counselors asked clients over 80 questions (M = 84; range 9–206) and clients asked, on average, 19 questions (range 0–334). Companions asked, on average, eight questions per session. Thirty-four percent (34%; M = 173 statements) of client talk indicated receptiveness to or agreement with the discussion, which was similar to that of companions (23%; M = 21 statement). The counselors also exhibited receptive behavior with 12% (M = 146 statements) of their total dialogue showing agreement and a sense of joining with client and the companion's presentation of information.

Note in Table II, that the counselor's communication does not significantly vary with the presence of a companion. In contrast, when a companion is present, the substantive nature of the exchanges are enhanced by a net increase in the amount of medical and psychosocial talk and questions that are asked. Companion communication largely parallels that of the client with the bulk of their contribution to the session being in the form of medical and psychosocial

statements. However, companions devote proportionally more of their dialogue to question asking (6%; M frequency = 8.38; SD = 26.01 vs. 4%; M frequency =17.92; SD = 34.43; t[106] = 2.78, $p < .01$) and significantly less to receptive statements than clients (23%; M frequency = 33.48, SD = 42.14 vs. 32%; M = 157.64, SD = 122.56), probably because less of the counselor's information is directed towards them than to the client (t[106] = 5.36, $p < .001$).

ANCOVA models in which communication categories (standardized as proportion of all speaker talk) served as the dependent variables and client identity characteristics (age, gender, education, marital status, personal history of cancer, and first degree relative history of cancer) and presence of a companion were entered as covariates. This analytic model

Table II. Descriptive Data on the Communication Patterns of the BRCA1 Genetic Counseling Sessions

Companion not at session $N = 60$		Companion at session $N = 107$			All sessions $N = 167$	
Genetic counselor	Client	Genetic counselor	Client	Companion	Genetic counselor	Client
			Medical talk			
Ratio = .6342	Ratio = .3760	Ratio = .6131	Ratio = .4165	Ratio = .4120	Ratio = .6237	Ratio = .3963
Mean = 820.91	Mean = 195.13	Mean = 777.09	Mean = 187.19	Mean = 52.09	Mean = 792.84	Mean = 190.04
SD = 285.33	*SD* = 102.82	*SD* = 270.14	*SD* = 117.96	*SD* = 49.68	*SD* = 275.64	*SD* = 112.50
Range = 315–1260	Range = 18–397	Range = 220–1406	Range = 7–746	Range = 0–220	Range = 220–1406	Range = 7–746
			Psychosocial talk			
Ratio = .0353	Ratio = .0343	Ratio = .0314	Ratio = .0376	Ratio = .0387	Ratio = .0334	Ratio = .0360
Mean = 48.18	Mean = 17.92	Mean = 43.11	Mean = 21.52	Mean = 5.96	Mean = 44.93	Mean = 20.23
SD = 35.36	*SD* = 16.50	*SD* = 35.10	*SD* = 34.99	*SD* = 11.68	*SD* = 35.17	*SD* = 29.691
Range = 0–143	Range = 0–64	Range = 0–170	Range = 0–192	Range = 0–77	Range = 0–170	Range = 0–192
			Receptiveness			
Ratio = .1117	Ratio = .3622	Ratio = .1213	Ratio = .3179	Ratio = .2279	Ratio = .1165	Ratio = .3401
Mean = 138.72	Mean = 199.23	Mean = 150.22	Mean = 157.64	Mean = 33.48	Mean = 146.08	Mean = 172.58
SD = 64.24	*SD* = 116.88	*SD* = 66.99	*SD* = 122.56	*SD* = 42.14	*SD* = 66.05	*SD* = 121.85
Range = 19–329	Range = 9–486	Range = 30–416	Range = 0–503	Range = 0–267	Range = 19–416	Range = 0–503
			All questions			
Ratio = .0647	Ratio = .0412	Ratio = .0681	Ratio = .0376	Ratio = .0643	Ratio = .0664	Ratio = .0394
Mean = 81.23	Mean = 21.27	Mean = 85.47	Mean = 17.92	Mean = 8.38	Mean = 83.95	Mean = 19.12
SD = 36.01	*SD* = 20.64	*SD* = 36.08	*SD* = 34.43	*SD* = 11.31	*SD* = 36.01	*SD* = 30.18
Range = 12–167	Range = 0–100	Range = 9–206	Range = 0–334	Range = 0–62	Range = 9–206	Range = 0–334

provides outcome means adjusted for covariates for each of the three counselors and for our purposes is more informative than the regression loadings for a multiple regression analysis.

As a check for the influence of the covariates (i.e., client characteristics and presence of a companion) on counselor communication, we compared the means across counselor for each outcome with the means adjusted for the covariates and found that without exception that the raw and adjusted means differed by less than 1 %, thus indicating that the covariates had a minimal impact on counselor communication behavior. However, we found that the counselors significantly varied in their communication from each other, as can be seen in Table III. For example, 66.7% of counselor no. 2's communication fell in the medical category. This is significantly higher than that for either counselor no. 1 (62.8%) or counselor no. 3 (53.8%). Furthermore, clients of counselor no. 2 provided more medical information to their counselor (46.8%) than the clients of the other two counselors (GC no. 1, 37.4%; GC no. 3, 39.5%). Similarly, the communication of counselor no. 1 was more psycho-social in nature than that of the other counselors (4.5% vs. 1.3% for GC no. 2 and 2.3% for GC no. 3).

In our ANCOVA model, we also examined the impact of covariates (i.e., client characteristics and presence of a companion) with client communication behaviors as the dependent variables. With the exception of gender, we found that the covariates had little impact on client communication. Women asked significantly more questions ($F[9,166] = 9.44$, $p < .005$), made more receptive statements ($F[9,166] = 10.19$, $p < .01$), and were more verbally active then men ($F[9,166] = 9.44$,$p < .0001$).

DISCUSSION

Our findings both confirm earlier insights into the genetic counseling process and present some new ones. We have largely replicated findings related to the feasibility and utility of the RIAS in genetic counseling applications, as well as in our description of the largely educational (as opposed to psychosocial) focus of pretest genetic counseling sessions. Our unique contribution has been in describing the role of the client companion in genetic counseling sessions; this is important, not only because their presence is common, indeed two-thirds of study sessions included a companion, but because it is associated with subsequent client behavior in terms of test uptake and client follow-up. Finally, we have identified several sources of session variation, including individual counselor differences as well as the presence of a client companion.

Table III. Communication Differences among the Genetic Counselors

	F	Counselor no. 1 raw mean	Counselor no. 2 raw mean	Counselor no. 3 raw mean
Genetic counselor Medical talk[abc]	19.30	.628	.667	.538
Client Medical talk[ac]	11.29	.374	.468	.395
Genetic counselor Psychosocial talk[abc]	61.35	.045	.013	.023
Client Psychosocial talk[a]	2.56	.041	.025	.038
Genetic counselor Questions[bc]	6.52	.064	.061	.082
Client Questions	1.72	.038	.047	.030
Genetic counselor Receptiveness[bc]	30.01	.101	.115	.172
Client Receptiveness[ac]	15.50	.384	.262	.286
Client Dominance[ab]	8.22	.391	.300	.443

Note. Significant at $p < .05$.
[a]GC 1 different from GC 2.
[b]GC 1 different from GC 3.
[c]GC 2 different from GC 3.

In terms of our first findings, the application of the RIAS to the very long and complex BRCA1 pretest counseling sessions recorded in our study was both feasible and practical. Coding time was over twice the duration of the session; on average, an 82 min counseling session took 3.5 h to code. Consequently, we devoted approximately 600 research hours to complete coding of our study sessions. Alternative methods of analysis that depend on transcription may make analysis

of large data sets impractical. Our estimate of transcription time for counseling sessions is six times the length of a session. Were we to have transcribed these study sessions, we would have needed to devote an additional 1400 h to our analytic timetable.

The second objective of the study was to provide descriptive information about the BRCA1 genetic counseling process. Our findings show that the BRCA1 sessions were predominantly educational in focus with relatively little dialogue devoted to psychosocial issues which is consistent with Butow and Lobb's (2004) findings of BRCA1 sessions. Our findings indicate that clients were responding to the information counselors provided with nearly a third of their statements reflecting agreement and receptive behaviors. Despite counselors devoting the ma jor portion of the sessions to presenting information, the number of questions the counselors asked (M = 84) indicates that they were also eliciting a substantial amount of information.

Of interest, the limited psychosocial focus of the current project may be partially explained by the design of the parent study. All participants met separately with a marriage and family counselor whose role was to screen for depression and anxiety and to explore readiness for testing. Even though psychosocial issues was a designated topic of the counseling session protocol (Baty et al., 1997), it is reasonable to suppose that the counselors believed that the psychological "bases were covered" by the marriage and family counselor, and so they only briefly addressed psychosocial issues. In addition, we analyzed only pretest genetic counseling sessions which included family history, medical assessment, and education. It is likely that posttest sessions would have a higher proportion of psychosocial content especially given that extensive education information was presented in the initial session. Furthermore, a primary counselor objective of the posttest session is to facilitate clients' coping with their test result (carrier or noncarrier) in light of the implications for themselves and their family members.

Our unique contribution is in drawing attention to the role of nonclients (companions) in counseling sessions. Client companions were present in nearly two-thirds of the study sessions, and we are confident that this is a common feature of genetic counseling sessions. These individuals were active participants in the counseling session and affected the way the client communicated with the counselor, and subsequent client behavior in terms of testing and follow up.

We found that counselor communication did not vary according to the presence of a client companion. In contrast, clients who attended sessions alone showed different patterns of communication than clients who attended the session with a companion. Clients with a companion provided proportionally more medical information than clients without a session companion. Although, companion talk largely paralleled that of clients; it is apparent that companions fulfilled a particular function. Companions asked proportionally more questions than clients which is likely to have prompted additional discussion and clarification by clients on medical and family history information. For example, it would not be atypical for a companion to say something similar to: "What about Aunt Beth? Didn't she have cancer too?" or to the counselor "I think she (client) has forgotten to mention her uncle's condition. Would that affect her risk?"

Many investigators have appealed for a better understanding of the role individual differences play in cancer communication (Kahana and Kahana, 2003; Lerman et al., 2002; Ramirez, 2003). In this regard, our results indicate that variation in session communication was primarily determined by the genetic counselors, themselves, not by client characteristics. We had not anticipated this finding given that the three study counselors were similarly experienced and followed a standard research protocol. Thus our findings raise the question of whether protocol driven interventions are truly standardized in all ways. While the counselors may have covered similar ground in terms of the research protocol (e.g., review of family history, screening recommendations, explanation of testing; Baty et al., 1997), the manner in which this was accomplished differed from counselor to counselor.

This finding is consistent with those reported by Lobb and colleagues (2005). They reported differences in the communication behaviors of BRCA1 sessions among BRCA1 genetic consultants; however, their project examined consultants from three different professions (including two genetic counselors, two geneticists, and one oncologist), and they did not distinguish training effects from individual effects. The finding of provider variation of BRCA1 pretest education and counseling communication raises interesting questions for the profession of genetic counseling and for training. Clearly, more research is needed to determine what provider factors are associated with communication differences and if the variation constitutes a clinical impact.

Individual client differences, in our study, prompted very little variability in counselor communication, suggesting that counselors tend to be consistent in their communication regardless of their client's identity characteristics. Similar to findings with 127 primary physicians (Roter et al., 1997), our results suggest that health care providers tend to manifest a consistent style of communication across patients. An exception however, was in regard to client gender.

More tailoring in counselor communication was reported by Lobb and colleagues (2002). These investigators found that such client factors as age, personal history of cancer, professional status were all associated with differences in BRCA1 genetic consultants' communication. For example, consultants more frequently discussed nonmedical prevention strategies for breast cancer with young women than older women. Additionally, they found consultants used more behaviors that facilitated client understanding with nonprofessional women compared to professional women. In part, the difference in findings between our study and Lobb and colleagues (2002) can be attributed to a myriad of differences in the two projects: the studies varied in study design (clinical vs. research protocol), discipline of consultants, coding systems and computations of codes, and the statistical approach used to examine the impact of individual differences on communication.

Besides gender, we found that client characteristics were not consistently related to variation in their own communication behaviors. Women clients asked more questions, made more statements indicative of receptiveness and were more verbally active than were male clients. Based on previous literature on gender differences in health communication, we expected to find these gender differences in the session exchange (Hall and Roter, 2002). Even though male carriers can pass the mutation to their offspring and experience a small increase in the risk of breast, colon, and prostate cancer compared to the general population, the content of the BRCA1

sessions is likely to be more personally engaging for women related to their concerns about their personal risk of breast cancer and the risk for their children. Moreover, previous research suggests that female patients are more talkative and engage in more positive talk than male patients (Roter and Hall, 1993). Additionally, as there is some evidence of the effect of gender concordance in medical communication research (Roter and Hall, 2004), gender concordance between client and counselor may explain women talking more and expressing more receptiveness with their female genetic counselors than male clients.

LIMITATIONS

The findings of this study must be interpreted in light of its limitations. Given that only pretest genetic counseling sessions were analyzed during which a good deal of session time is typically allocated to medical assessment and educational activities, it is likely that analyzing posttest sessions would yield different results. Additionally, the population under study was a large BRCA1 kindred of European descent who were enrolled in the mid 90's. This raises the question about whether these individuals are representative of individuals in the larger population that may seek and receive genetic counseling. While our sample reflects the characteristics of the overwhelming majority of those currently seeking cancer predictive testing at present—educated Caucasians, this may not be true in the future.

Because only three counselors took part in the study, it is possible that these counselors are not representative of common practice and simply represent idiosyncratic approaches to communication of research protocol sessions. Furthermore, counseling practices may have changed in the 10 years since the study sessions were conducted. Finally, although the majority of session dialogue was examined, we cannot discuss the relationship of the unexamined dialogue. It is possible that some coded statements, such as those reflecting acute distress, may show an extremely low frequency within in a session but have salient impact on the communication behaviors of all session attendees.

CONCLUSIONS

The profession of genetic counseling is relatively young (Sarangi et al., 2004) and communication in genetic counseling, particularly in cancer clinical genetics, is complex. Our findings suggest that it is both practical and feasible to apply the RIAS to these long and complex sessions without transcription. These BRCA1 sessions were primarily counselor driven with a biomedical focus. Our findings indicate that the largely unacknowledged role of the companion at the session may have important implications for the comprehensive nature of the information a counselor collects and may influence client testing decisions. Even with the apparent restriction of a research protocol, we found that counselor identity predicted the bulk of the communication in a session. More research is needed to understand the predictors of individual counselor communication style, the impact of clinical training and supervision on counselor communication patterns, and finally, on the role of the client companion. It is our hope that continued study in the field of genetic counseling communication will provide an evidence base to guide training and service for the benefit of the field and the clients it serves.

ACKNOWLEDGMENTS

This study was funded by the National Human Genome Research Institute (R03HG002359; Principal Investigator, Lee Ellington).

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